AMENDMENTS TO THE CLAIMS

Claims 1-9.   (Canceled)

10.   (new) Method for real-time navigation using three-carrier radio signals of first, second and third different frequencies that increase in value from said first to said third carrier frequency, to determine the position of a rover, said radio signals being transmitted by a given number of transmitters installed aboard satellites orbiting around the Earth and in view of said rover, said signals being received by a receiver associated with said rover and a receiver associated with at least one ground station among a plurality of fixed ground stations called reference stations, said radio signals passing through an ionospheric layer of the atmosphere surrounding said earth and experiencing disturbances that generate phase ambiguities in said carriers, the method comprising the steps of:

determining, in said rover, an extra-wide lane ambiguity of the phase differences between said third and second carriers, from a combination of pseudoranges using a single code value;

estimating, in said rover, a wide lane ambiguity of the phase differences between said first and second carriers, from said extra-wide lane ambiguity;

determining, in said rover, ambiguity resolution of one of said carrier frequencies from said wide lane ambiguity; and

applying real-time ionospheric corrections during the resolving step, said ionospheric corrections being based on a continuously updated real-time ionospheric model of said ionspheric layer.

11.   (new) Method of claim 10, wherein the step of resolving comprises the step of performing said ambiguity resolution is on said first carrier frequency.

12.   (new) Method of claim 10, wherein said model is a descriptive ionospheric model of said ionospheric layer, determined by at least one of said ground reference stations receiving signals transmitted by a predetermined number of said satellites orbiting around the Earth, said signals comprising at least two carriers of different frequencies; and the method further comprising the steps of delivering said model

from phase data from said transmitted signals and transmitting data corresponding to said ionospheric model.

13.   (new) Method of claim 12, wherein said ionospheric model determination is obtained from the estimate of the free electron distribution in said ionospheric layer, in that this estimation being performed approximately by breaking down the ionospheric layer into a grid of resolution volume units called "voxels," illuminated by the radio radiation of said signals propagating in said ionospheric layer, in which the ionospheric electron density distribution is presumed to be constant at a given moment, and in that said determination is obtained through real-time resolution of the average electron density in each of said volume units illuminated by said radio radiation using a so-called Kalman filter.

14.   (new) Method of claim 13, further comprising the step of combining data associated with said ionospheric model with geodetic data calculated simultaneously, and wherein said geodetic data are calculated by only one of said fixed ground reference stations references to as a master station, and distributed to said plurality of fixed ground reference stations.

15.   (new) Method of claim 10, further comprising the step using three pseudorange codes, associated with said three carriers, during the step of determining said extra-wide lane ambiguity.

16.   (new) Method of claim 11, further comprising the step of performing an integrity test using pseudorange codes, wide lane codes and a code of said second carrier frequency to detect jumps associated with an error in said ambiguity resolution of said first carrier frequency.

17.   (new) A satellite navigation system for implementing the method according to any of the preceding claims, comprising:

a plurality of satellites orbiting around the Earth, each of the satellites transmitting said three-carrier signals of different frequencies;

at least one rover comprising:

a receiver for receiving said three-carrier signals from said plurality of satellites; and

integrated calculation means for performing determining an extra-wide lane ambiguity of the phase differences between said third and second carriers from a combination of pseudoranges using a single code value, estimating a wide lane ambiguity of the phase differences between said first and second carriers from said extra-wide lane ambiguity, determining ambiguity resolution of one of said carrier frequencies from said wide lane ambiguity, and integrating ionospheric corrections derived from a descriptive ionospheric model of a region of the ionosphere passed through by radio radiation of said three-carrier signals transmitted by said plurality of satellites; and

a plurality of fixed ground reference stations, each comprising a receiver for receiving said three-carrier signals transmitted by said plurality of satellites, integrated calculation means for determining said descriptive ionospheric model of the ionospheric layer, and a transmitter for transmitting data corresponding to said ionospheric model to said receiver of said rover; and

wherein at least one of said fixed ground reference stations is designated as a master station, said master station comprises a receiver for receiving said three-carrier signals transmitted by said plurality of satellites, means for calculating geodetic data, and a transmitter for distributing said geodetic data to said plurality of fixed ground reference stations.

18.   (new) System of claim 17, wherein said rover is located at a distance of more than 100 km from the nearest fixed ground reference station.